

Abstract of th Disclosure

A power tool such as an electric drill typically contains a gear train that couples the output spindle of the motor to the tool bit-receiving chuck and has associated therewith a degree of looseness which must be taken up before torque from the motor is applied to the tool bit. The control circuit for the power tool increases the effective torque output of the tool after a predetermined torque level is attained, by alternately turning the motor on and off, with the duration of the off-time sufficient to permit the gear train to relax, thus giving the motor a "running start" when power is reapplied. Various alternative schemes for transitioning to this ratcheting mode of operation are disclosed including the sensing of a predetermined threshold current, a predetermined increase in motor current, and a predetermined rate of deceleration in motor speed. The control circuit preferably provides the operator with means for adjusting the transition point as well as for varying the duration of the on-time in the ratcheting mode. Additional alternative embodiments of the present invention are disclosed that permit the power tool to be continuously operated in a low frequency mode to advantageous effect. Corresponding methods for controlling the operation of the electric motor of a power tool are also disclosed.